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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Paper No. 33

Application Number: 09/040,825  
Filing Date: March 18, 1998  
Appellant(s): FRYBERG ET AL.

\_\_\_\_\_  
Dara L. Onofrio  
For Appellant

**MAILED**  
OCT 07 2003  
**GROUP 1700**

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed July 03, 2003.

**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

As stated in the brief, there are no related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) *Summary of Invention***

The summary of invention contained in the brief is correct.

**(6) *Issues***

The appellant's statement of the issues in the brief is substantially correct. The changes are as follows:

The examiner withdraws the rejection based on Kashiwazaki et al. (US 5,747,146) in view of Smigo et al. (US 5,281,307). Accordingly, issue "B" is now: Whether claims 3, 4, and 6 to 13 are unpatentable under 35 U.S.C. §103 over U.S. Patent No. 4,801,497 to Kono et al. in view of U.S. Patent No. 5,281,307 to Smigo et al.

**(7) Grouping of Claims**

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because appellant's brief does not include reasons in support of appellant's grouping of claims. See 37 CFR 1.192(c)(7).

With respect to each ground of rejection, claims 3, 4 and 6-13 stand or fall together.

**(8) Claims Appealed**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) Prior Art of Record**

4,801,497	KONO et al.	01-1989
5,281,307	SMIGO et al.	01-1994

**(10) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 3, 4 and 6-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The “enhanced light fastness properties” limitation set forth in independent claims 12 and 13 renders the claims indefinite because it is not clear what the comparison point is for determining whether a recording sheet comprising said layer has enhanced light fastness properties. It is not certain if any recording sheet comprising said layer would inherently have enhanced light fastness properties. If not, what is the basis for determining that a particular recording sheet meets this limitation?

The “enhanced light fastness properties” limitation also renders the claims indefinite because the scope of “light fastness properties” is not clear. The paragraph bridging pages 14 and 15 of the specification describes one test for light fastness in which % loss of density is determined. Other than % loss of density as measured by the described test, what other light fastness properties can be or must be enhanced in order to meet the claim limitation of enhanced light fastness properties?

Claims 3, 4 and 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kono et al. (4,801,497) in view of Smigo et al. (5,281,307).

Kono et al. disclose recording media for ink jet printing comprising a support and at least one ink-receptive layer. Kono et al. teach the use of cationically modified polyvinyl alcohol in an ink-receptive layer.

Kono discloses the use of cationically modified polyvinyl alcohol wherein the cationic group is present in the polymer in an amount between 0.05 and 20 mole percent. The cationically modified polyvinyl alcohol is used in combination with one or more other polymers.

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See the whole patent. In particular, see the abstract, column 4, lines 11-18, c. 4, l. 59 to c. 6, l. 16 and c. 7, l. 35-53.

Kono does not explicitly disclose a copolymer of the general structure set forth in independent claims 12 and 13, although such a copolymer is within the scope of Kono's cationically modified polyvinyl alcohol which is a polyvinyl alcohol having a cationic group such as a primary, secondary or tertiary amino group, or a quaternary ammonium group. The copolymer required by the present claims is a polyvinyl alcohol having a primary or secondary amino group. The mole percent range of the cationic groups as disclosed by Kono (0.05 to 20 mole percent) encompasses the relative amount of vinyl amine units required by the present claims ( $y = 0.05$  to  $0.2$ , which is 5 to 20 mole percent). Kono discloses a preferable range (0.1 to 10 mole percent) which overlaps the presently claimed range for  $y$ .

Smigo et al. disclose a paper coated with a polyvinyl alcohol/vinyl amine copolymer containing between 0.5 and 25 mole% vinylamine units, preferably 2 to 12 mole% vinylamine units. The copolymer may be made by copolymerizing vinyl acetate with N-vinylamides such as N-vinyl formamide or N-vinyl acetamide, followed by hydrolysis of the vinyl acetate to vinyl alcohol and hydrolysis of the vinyl amide to vinylamine. A crosslinking agent may also be used to crosslink the copolymer. See the whole patent. In particular, see column 1, line 44 to c. 2, l. 22, c. 4, l. 61 to c. 5, l. 25, c. 6, l. 8-20, c. 6, l. 36-60 and Examples 1-5. The copolymers disclosed by Smigo are polyvinyl alcohols containing amino groups, and are inherently cationic. Smigo teaches using the copolymers to coat paper and paper-type products in order to provide improvements in properties such as dry strength, wet strength and fold resistance.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the copolymers disclosed by Smigo as the cationically modified polyvinyl alcohol used in the recording medium of Kono. One of ordinary skill in the art would have been motivated to do so by the fact that the copolymers taught by Smigo meet Kono's requirements for the cationically modified polyvinyl alcohol including the mole percent requirements for the cationic group, and by Smigo's teachings regarding the improved properties provided by using the copolymer. One of ordinary skill in the art would recognize that the improved properties taught by Smigo would be beneficial with respect to a recording medium for ink jet printing.

Regarding the requirement for an amount of copolymer between 10 to 75 weight % of the combined amount of copolymer and binder, the Kono patent discloses amounts of cationically modified polyvinyl alcohol (hereinafter "catPVA") within the required range.

For example, Kono teaches that the amount of Polymer-A should be in the range of 1 part by weight to 33 parts by weight based on 100 parts by weight of catPVA (see col. 6, lines 16-35). This equates to an amount of catPVA of about 99 to about 75% by weight based on the combined weight of catPVA and Polymer-A (e.g. in a composition containing 33 parts by weight Polymer-A and 100 parts by weight catPVA, the composition contains about 75 percent by weight catPVA based on the combined weight of catPVA and Polymer-A). An amount of 75% by weight is within the range required by the present claims. Further, Kono teaches that other polymers may be used in combination with the catPVA and Polymer-A, with the weight of catPVA plus Polymer-A to the weight of the other polymers being in the range of 20:1 to 1:20, preferably 15:1 to 1:10 (see col. 7, lines 35-53). Thus, the use of other polymers results in other

amounts of catPVA within the range required by the present claims (e.g. in a composition containing 33 parts by weight Polymer-A and 100 parts by weight catPVA, and a 20:1 ratio of catPVA and Polymer-A to other polymer, the composition contains about 71% by weight catPVA based on the combined weight of catPVA, Polymer-A and other polymer).

Regarding the requirement that the layer comprising the copolymer provide the sheet with enhanced light fastness properties, it is the examiner's position that the recording medium of Kono, as modified to include the copolymer disclosed by Smigo in Kono's ink-receptive layer, would inherently have enhanced light fastness properties absent objective evidence to the contrary.

Regarding claim 13's requirement for a binder comprising gelatin, the Kono patent discloses gelatin. See column 7, line 38 of the Kono patent.

**(11) *Response to Argument***

Regarding the rejection under 35 U.S.C. 112, second paragraph, appellant argues that the ink receiving sheets of the invention were tested according to the procedures described at page 14, lines 31 to page 15, line 3 of the specification, and that appellant is not required to provide any additional test data to support the increase in light fastness properties limitation.

The examiner maintains the position that the limitation renders the claims indefinite. The claims do not require that the enhanced light fastness properties be determined by the procedure set forth in the paragraph bridging pages 14 and 15, and do not specify the comparison point for determination of enhancement of light fastness properties.

The data set forth on pages 20 and 21 of the brief in the arguments pertaining to the prior art rejection also demonstrate why the enhanced light fastness properties limitation renders the claims indefinite. Based on appellants' statements, Sample No. 3 utilizes a copolymer of the general structure set forth in present claims 12 and 13 while Sample Nos. 1, 2 and 4 do not. When printed with an Epson SP 890 and exposed to 10 Mluxh total illumination, the visual loss in % of initial density was greater for Sample 3 than for any of Sample Nos. 1, 2 and 4. Accordingly, for this comparison, the recording sheet utilizing the copolymer required by the present claims did not have enhanced light fastness as measured by the specified test. However, comparing sheets also printed with an Epson SP 890 but exposed to 20 Mluxh total illumination, the recording sheet utilizing the copolymer required by the present claims had enhanced light fastness as measured by the specific test when compared to one of three sheets that did not comprise the required copolymer. Utilizing an HP 970 instead of an Epson SP 890 printer, the recording sheet comprising the copolymer required by the present claims did not have enhanced light fastness compared to any of the comparison sheets for 20 Mluxh total illumination, but did have enhanced light fastness compared to one of the comparison sheets for 10 Mluxh total illumination.

The data demonstrate that the printer and/or ink used to print the sheet affects the outcome of the test, but the claims do not limit the printer and/or ink used in determining whether the claimed sheet has enhanced light fastness properties. The data also demonstrate that when subjected to two different amounts of total illumination as described in the method set forth in the paragraph bridging pages 14 and 15 of the specification, a sheet may exhibit an



enhanced light fastness property at one exposure level while failing to exhibit an enhanced light fastness property at the other exposure level.

Regarding the rejection under 35 U.S.C. 103(a), appellant argues that the Kono reference does not teach a catPVA range between 75 to 99% by weight. Referring to Examples 1-5 in column 10 of the Kono patent, appellant argues that the range supported by the Examples is between 77 to 90% by weight. This argument is not persuasive because Kono's disclosure is not limited to the examples. Kono does not limit the relative amount of catPVA to the amounts utilized in the examples.

Appellant further argues that Kono teaches away from the present invention because Kono's comparative example 3 uses catPVA in an amount of 50% by weight of the combined amount of copolymer and binder, which provided a sample that was unacceptable according to Kono. This argument is not persuasive because Kono's comparative example 3 does not utilize catPVA. Even if comparative example 3 did utilize catPVA, the argument would not be persuasive because it does not change the fact that Kono teaches a range having an endpoint in common with the range set forth in the present claims.

Appellant argues that there is no teaching, suggestion or incentive to combine the teachings of Kono and Smigo in the manner suggested; that the examiner is using hindsight to combine the references and reconstruct appellant's invention. It must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge

gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In the present case, Kono teaches the use of catPVA in an ink receiving layer of a recording medium such as coated paper. Smigo teaches advantages to be obtained by utilizing certain catPVAs to coat paper. One of ordinary skill in the art would have recognized that the improvements taught by Smigo would be beneficial with respect to a recording medium for ink jet printing and therefore would have been motivated to use Smigo's catPVA in Kono's recording medium.

Appellant also argues that Smigo is distinct from the present invention because Smigo incorporates the catPVA in the pulp whereas the present invention utilizes the catPVA in combination with at least one binder to create a coating layer. This argument is not persuasive because Smigo teaches adding a composition comprising catPVA at the dry end step of papermaking. In dry end addition, the paper is already formed, and the composition comprising catPVA is applied such as by flood coating or dipping of the paper into the composition. As described in Smigo's "Sample Preparation", solution solids are adjusted to achieve a desired "coat" weight. For example, see column 1, line 55-c. 2, l. 10 and c. 6, l. 36-60.

With respect to the data regarding light fastness properties (set forth in the brief and in Paper No. 28), statements regarding unexpected results must be supported by an appropriate affidavit or declaration. However, in the present case, it is the examiner's position that the data do not demonstrate superior/unexpected results commensurate in scope with the claims. As previously noted, the data also demonstrate the indefiniteness of the enhanced light fastness properties limitation of the present claims.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



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MRY

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